Water Use Efficiency Unit

Annual Report

FISCAL YEAR 2002-2003

Santa Clara Valley Water District

Santa Clara Valley Water District

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About the Santa Clara Valley Water District

The Santa Clara Valley Water District is the primary water resources management agency for Santa Clara County in California. It acts not only as the county's water wholesaler, but also as its flood protection agency and as the steward for its streams and creeks, underground aquifers and District-built reservoirs.

As the county's water wholesaler, the water district makes sure there is enough clean, safe water for homes and businesses. As the agency responsible for local flood protection, the water district works diligently to protect Santa Clara Valley residents and businesses from the devastating effects of flooding.

Our stream stewardship responsibilities include creek restoration and wildlife habitat projects, pollution prevention efforts and a commitment to natural flood protection.

Our mission

The mission of the district is a healthy, safe, and enhanced quality of living in Santa Clara County through the comprehensive management of water resources in a practical, cost-effective, and environmentally sensitive manner.

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Santa Clara Valley Water District

Executive Summary 4

FY 2002 Program Highlights 6

Water Conservation 6

Water Conservation Timeline 7

Water Recycling 8

Water Recycling Timeline 9

Education and Outreach 11

Conservation and Recycling Studies and Research 12

WUE Program Performance:

Conservation and Recycling 13

Overview 13

Water Conservation 14

Overview 14

Water Conservation in the Home 15

Water-Wise House Call Program 15

Low-Flow Showerhead and Aerator Replacement Program 16

Residential Clothes Washer Rebate Program 16

Residential Ultra-Low-Flush Toilet Replacement Program 17

Education and Outreach to Residents 18

Water Conservation in Business 19

Irrigation Technical Assistance Program 19

Water Efficient Technologies Program 20
Commercial Ultra-Low-Flush Toilet Installation Program 21
Pre-Rinse Sprayer Program for Restaurants 22
Commercial Clothes Washer Rebate Program 22
Education and Outreach for Business 23

Water Conservation in Agriculture 24
Mobile Lab Program 24
California Irrigation Management Information System 25
Education and Outreach for Agriculture 26

Water Recycling 27

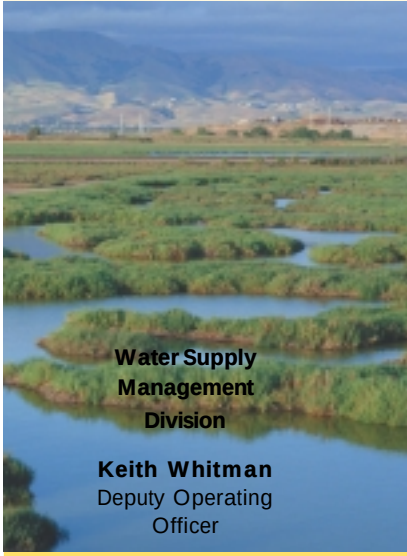
Overview 27
South Bay Water Recycling Program 28
South County Recycled Water 31
Palo Alto and Sunnyvale 33
Water Recycling Outreach and Education 33

Program Drivers and Partnerships 34

WUE Program Drivers 34
WUE Grant Awards 35
District Partnerships 37

Planning Ahead: Studies and Research 38

Water Conservation Studies and Research 38
Water Recycling Studies and Research 40
Conclusion 42



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Introduction

This second annual report, issued by the Santa Clara Valley Water District's Water Use Efficiency unit (WUE), provides an overview of achievements in fiscal year 02-03, a look at current water use efficiency programs, both water conservation and water recycling, and a look at new and future projects and partnerships.

The Santa Clara Valley Water District has been and continues to be a leader in water use efficiency with programs that are innovative and comprehensive in scope. In FY 02-03, these water conservation and water recycling programs saved the district a cumulative total of nearly 40,000 acre-feet of water.

Given current population growth, district projections show that before the year 2020, Santa Clara County will likely experience water shortages during critically dry years. The district's Integrated Water Resources Planning (IWRP), is the district's primary water supply management planning tool. The IWRP identifies maintaining a diversified water portfolio as an important element in meeting long term water reliability, and local programs such as water use efficiency are recommended ways to diversify future investments. IWRP 2003 recommendations include a goal of 92,000 acre-feet in water conservation savings by year 2020, and 20,000 acre-feet of water recycling by year 2010. Both of these programs are on their way to meeting or exceeding these goals.

In order to meet these water savings goals, the Water Use Efficiency Unit is always looking at new programs, innovative technologies and new partnerships to help fund these endeavors. Along with continuing water conservation programs such as the Water-Wise House Calls Program, the High-Efficiency Clothes Washer Rebate Programs, and the Irrigation Technical Assistance Program, new programs such as the Pre-Rinse Sprayer Program and the Landscape and Agricultural Area Measurement and Water Use Baseline Study Program helped the WUE unit to achieve 31,609 acre-feet per year of water savings for FY 02-03.

Additionally, the district's partnerships with the cities and publicly-owned agencies that produce and/or distribute recycled water helped recycled water use in Santa Clara County to grow to 8,368 acre-feet per year in FY 02-03. By carefully laying the groundwork for new programs and studying recycled water uses and issues, the district will be ready to expand the countywide water recycling system in the future.

In terms of bringing revenue to the district, FY 02-03 was a record year for the WUE unit. Grants of nearly $2.7 million in revenue were

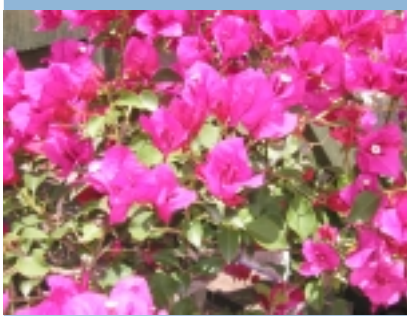
awarded to the district from the State of California Department of Water Resources (including several Proposition 13 Urban Water Conservation grants), the Environmental Protection Agency and the California Energy Commission.

Fiscal Year 02-03 was also a record year for cost-sharing agreements with other agencies, with a total of $1,083,855. These agencies include the cities of Palo Alto, San Jose, Sunnyvale, and Santa Clara, the California Urban Water Conservation Council, the California Water Services Company, and Energy Solutions (a private agency that received California Public Utilities Commission grant funding to administer a clothes washer rebate program).

The district's South County Water Recycling Improvement Project was selected by the Northern California Chapter of the WateReuse Association as the recipient of its "Outstanding Innovative Water Project" for 2002.

Finally, the district is proud to have received two major awards in FY 02-03, the Association of California Water Agencies (ACWA) Theodore Roosevelt Environmental Award for Excellence in Natural Resources Management, and the Northern California Chapter of the WateReuse Association's Outstanding Innovative Water Project for the district's South County Water Recycling Improvement Project.

The district received the Association of California Water Agencies (ACWA) Theodore Roosevelt Environmental Award for Excellence in Natural Resources Management for 2003.



The Water Use Efficiency Unit continued to provide education and outreach in FY 02-03, promoting district water use efficiency programs to residents and businesses at nearly thirty different events. These outreach events, seminars and workshops are targeted at a wide variety of audiences. Many of these educational opportunities are co-sponsored and coordinated in cooperation with other agencies, such as cities, utilities, water retailers, universities, etc.

Residential outreach: The district targets residents by sponsoring booths at events such as the South Bay Fall Home and Garden Show, Pumpkins in the Park, district-sponsored workshops on water-wise gardening, and various Earth Day events, just to name a few.

Business outreach: Industry-specific outreach events in FY 02-03 included the district co-sponsored Industrial Water Efficiency Conference, the Hotel and Restaurant Industry conference, the Greening Your Business seminar, among others.

Agricultural outreach: Outreach events for the agricultural industry included the Farm Water Quality Planning Workshop, the Irrigation and Fertilization seminar, and the seminar on pesticide legislation, co-sponsored by the district, and many others.

The following is a list of community outreach events, seminars, workshops and trade shows:

Water Use Efficiency Events Calendar

FISCAL YEAR 2002-2003

2002

AUG	Aug. 23-25	**South Bay Fall Home and Garden Show** *Water Wise Gardening booth at event*
OCT	Oct. 12	**Pumpkins in the Park** *Water Wise Gardening booth at event*
	Oct. 21	**California Native Plant Society Conference** *Water Wise Gardening booth at event*
NOV	Nov. 22	**Industrial Water Efficiency Conference** *Event hosted and co-sponsored by district*
	Nov. 26 & 27	**Farm Water Quality Planning** *Workshop co-sponsored by district*
DEC	Dec. 12	**Continuing Education Seminar** *Seminar on pesticide legislation, co-sponsored by district*

2003

JAN	Jan. 23	**Nor Cal Spring Horticulture Trade Show** *Water Wise Gardening booth at event*
FEB	Feb. 26-28	**WateReuse Annual Conference** *Water Use Efficiency booth at event*
MAR		**SCVWD Water-Efficient Gardening Workshop Series:**
	March 1	Workshop: Selecting Plants for your Water-Wise Garden
	March 8	Workshop: Water-Efficient Irrigation Design
	March 15	Workshop: Water-Wise Garden Design
	March 22	Workshop: Gardening with Native Plants
	March 27	**TCAA Expo (Tri-County Apartment Association)** *Water Use Efficiency booth at event*
APR	April 5	**9th Annual Master Gardener Spring Garden Market** *Water Wise Gardening booth at event*
	April 11	**"Greening Your Business" seminar** *Speaker and booth at event*
	April 16	**Irrigation and Fertilization Seminar** *Co-sponsored by district*
	April 24	**IBM Earth Day Event** *Water Wise Gardening booth at event*
	April 26	**Spring in Guadalupe Gardens** *Water Wise Gardening booth at event*
MAY	May 7	**Morgan Hill Chamber of Commerce Business Expo** *Water Use Efficiency booth at event*
		SCVWD-sponsored irrigation seminars for landscape contractors:
	May 8	Irrigation Seminar in English
	May 9	Irrigation Seminar in Spanish
	May 12	**Workshop for Hotel & Restaurant Industry** *Water efficiency workshop, co-sponsored and hosted by district*
	May 18	**Going Native Garden Tour** *Co-sponsored by district*
MAY	June 6	**Stanford Low Water Use Demonstration Gardening** *Water Wise Gardening booth at event*
	June 14	**ECHO (Executive Council of Homeowners) Annual Show** *Water Use Efficiency booth at event*
	June 15	**SCVWD Day at SJ Giants** *Water Wise Gardening booth at event*
	June 26	**Hitachi Earth Day Event** *Water Wise Gardening booth at event*

SCVWD's Water Conservation booth at the 2002 South Bay Fall Home and Garden Show.

WUE PROGRAM PERFORMANCE:

Water Conservation

OVERVIEW

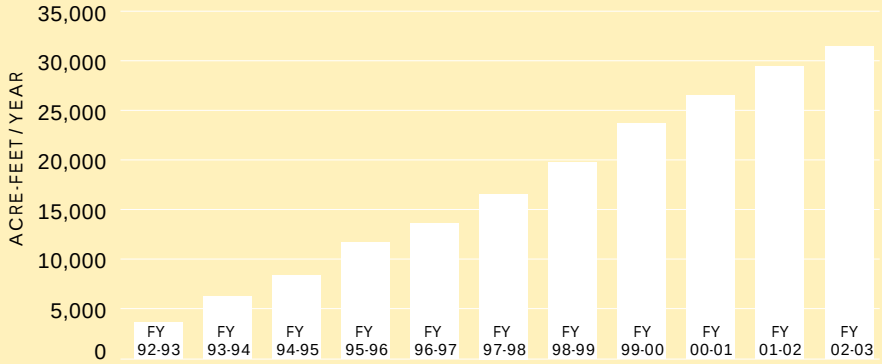
The district has over a dozen specific conservation programs, nearly all of which showed an increase in water savings last year, as well as every year since their inception. Conservation programs use a mix of incentives and rebates, free device installation, one-on-one home visits, site surveys and education outreach to reduce water consumption in homes, businesses and agriculture.

Besides meeting long-term water reliability goals, WUE programs help meet short-term demands placed on supply during critical dry periods. They also help reduce the occurrence of demand reduction requirements made to water retailers. Under the flexible IWRP strategy, short-term water conservation begins with awareness, shifts to voluntary use reduction, and relies on mandatory reduction only if the first two steps do not achieve savings goals.

Last year, water savings attributed to all WUE conservation programs for residents, business, and agriculture reached 31,609 acre-feet, putting the district on-target to meet its current IWRP conservation goals. By 2020, the district plans to save over 92,000 acre-feet (IWRP, 2003) of water per year through its current and future conservation programs. To assure that programs have the greatest impact at lowest cost, the district partners with cities and other agencies when possible to share financial and administrative demands. The district also continually evaluates the performance of its programs to ensure that they are delivered in the most cost-effective manner possible.

Rockrose, an evergreen shrub, is a water-wise choice for Santa Clara Valley gardens.

Total water savings for WUE conservation programs



Santa Clara Valley Water District

Water Use Efficiency

CONSERVATION TIMELINE

- District installs CIMIS weather station in Santa Clara
- District distributes 50,000 water conservation kits

1987

< DROUGHT YEARS >

- District conducts conservation media campaign

1991

Water Conservation in the Home

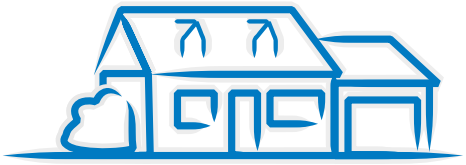
The district continues to expand residential programs, as this sector remains the biggest water consumer at 52 percent of total county water consumption. This amount is split fairly evenly between indoor and outdoor usages.

The district uses an integrated strategy of incentives and rebates, one-on-one home visits with free installations of water-saving devices, workshops, and outreach at community events to promote residential water savings. Last year, savings attributable to all residential conservation programs reached 23,500 acre-feet.

The district conducted nearly 3,500 residential home water use surveys through its Water-Wise House Calls Program in FY 02-03.

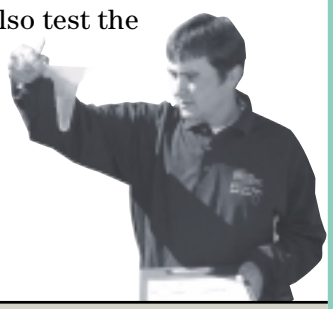
Water-Wise House Calls

The district performed nearly 3,500 residential home surveys during FY 02-03. The decision to hire an outside contractor has allowed the district to expand the program, using both staff and financial resources more efficiently.



Also in FY 02-03, the district continued to routinely inspect and change toilet flappers, which helped add over 300 acre-feet of water savings to the Water-Wise House Calls program over the last fiscal year period. These inspections are especially important since a California Urban Water Conservation Council study revealed that toilet leaks were the top reason for water waste in the home.

The district has been providing the free Water Wise House Call program since 1998. The program is available for residents of single-family homes and owners/managers of apartments, condominiums, and mobile home complexes. During the survey, trained technicians check for leaks, measure flow rates, offer conservation information, and install free showerheads and aerators. Surveyors also test the customer's irrigation system for efficiency, calculate and program a personalized irrigation schedule, and provide landscaping tips.



District technician Danny Pietsch on a Water-Wise House Call,checking irrigation system efficiency through a "catch-can" test.

- District is one of first signatories to the voluntary Memorandum of Understanding with the California Urban Water Conservation Council, which instituted conservation Best Management Practices

1991

- District introduces Residential Ultra-Low-Flush Toilet and Low-Flow Showerhead Replacement programs

1992

- District begins offering residential water-efficient landscaping workshops

1993

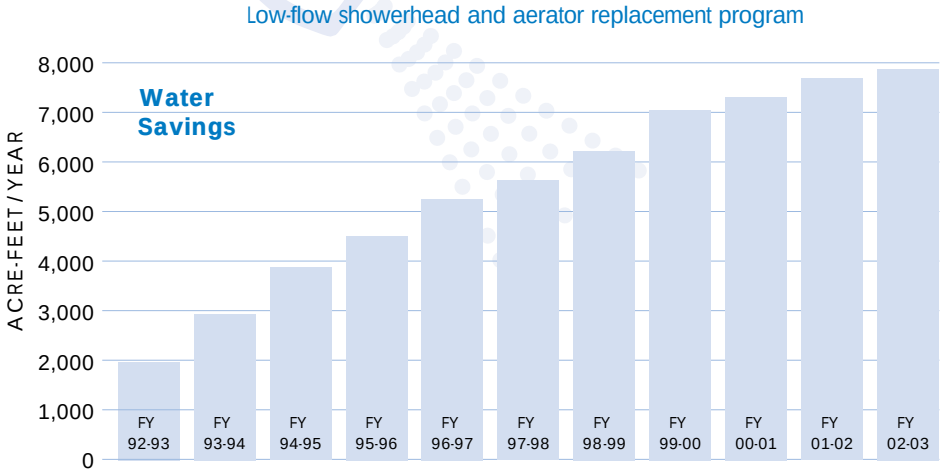
> > >

A Water-Wise House Calls survey technician tests faucet performance.

Low-flow Showerhead and Aerator Replacement Program

In FY 02-03, the district installed or distributed 17,275 free aerators and 8,025 low-flow showerheads, which is less than the previous year. Because the saturation rate for these low-flow devices is so high, due to plumbing codes, new construction, and the district's successful distribution program, the WUE Unit is not marketing low-flow showerheads and aerators quite so aggressively at community outreach events. However, they were still installed during Water-Wise House Calls, and are still available by mail, on-line through the district's website, and through water retailers.

Despite the slow-down in low-flow showerhead and aerator distribution, the retrofit program accounted for approximately 7,978 acre-feet per year in cumulative water savings for FY 02-03.



Residential Clothes Washer Rebate Program

The district continued to provide county-wide rebates to residential customers who replaced their standard-efficiency clothes washers with ENERGY STAR® machines, which use about 30 percent less water and 50 percent less energy than standard-efficiency machines. The district has been offering the rebate program since 1995.

Santa Clara Valley Water District

Water Use Efficiency

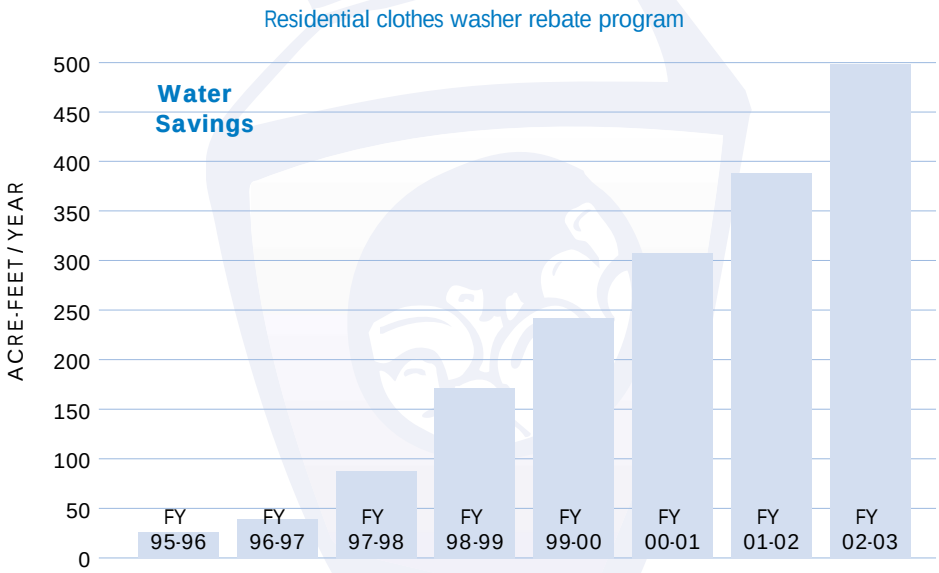
CONSERVATION TIMELINE (continued) > > >

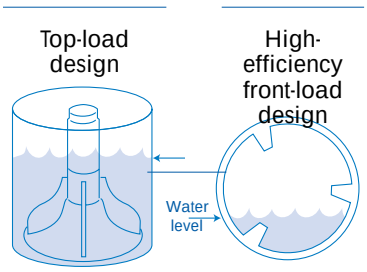
- CALFED Bay-Delta Program established to address environmental and water management issues of Bay-Delta system
- CIMIS Hotline established at District

1994

In FY 01-02, the district was one of seven agencies that received a CALFED matching grant applicable for residential clothes washer rebates. This reduced the District's rebate contribution from $100 to $50. The City of San Jose contributed $35 of this amount within the cost-shared San Jose/Santa Clara Water Pollution Control Plant tributary area.

In order to take full advantage of the available grant funding, during the third and forth quarters of FY 02-03, the district raised the rebate amount to $75, with another $75 being matched by the grant. In addition, PG&E began offering rebates on high-efficiency clothes washers for customers in their service area. Also, several of the high-efficiency clothes washer manufacturers, including Maytag, began offering a limited-time rebate of $50 for their machines. As a result of this above-average rebate amount, the participation in the Residential Clothes Washer Rebate Program was at a record high, with 8,942 rebates distributed during FY 02-03. This was a substantial increase from FY 01-02, when rebates numbered 6,176.





High-efficiency front-load machines wash the same amount of clothing while using less water and energy.

- District introduces Irrigation Technical Assistance Program and Residential Clothes Washer Rebate Program

1995

- Integrated Water Resources Plan (IWRP) adopted by Board with goals to increase county water conservation and recycling

1996

- District installs its second CIMIS weather station in Morgan Hill

1997

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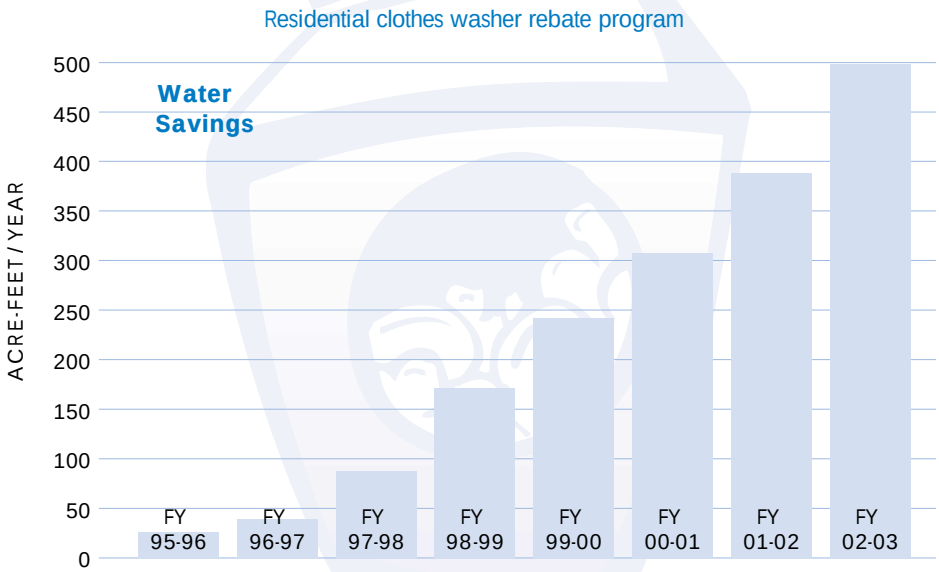

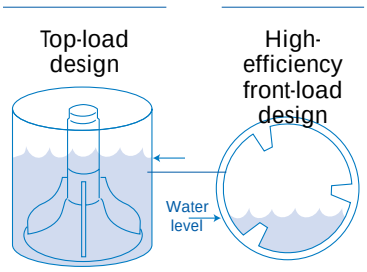

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1997

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The residential Ultra-Low Toilet Replacement Program saw 13,500 acre-feet per year in water savings for FY 02-03.

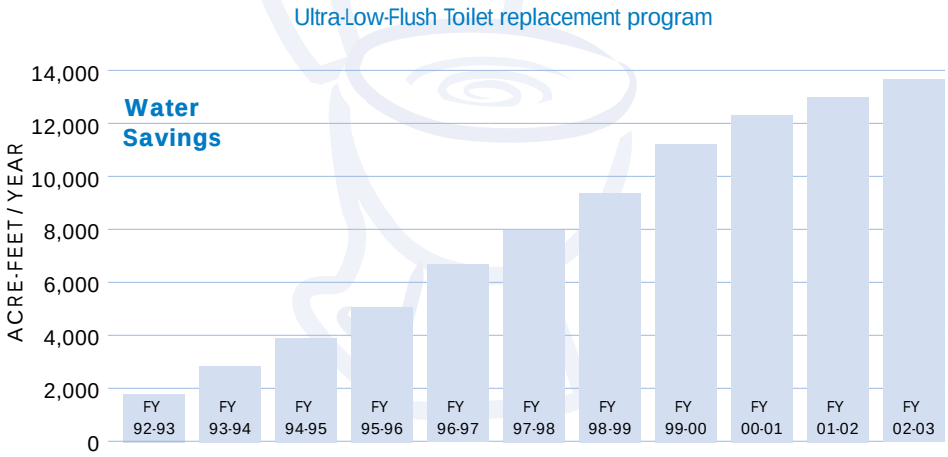
The CALFED grant ended on June 30, 2003. However, the district, along with other Bay Area water agencies, including Alameda County Water District, Contra Costa Water District, East Bay MUD, Zone 7 Water District and the Bay Area Water Users Association, applied for and received another regional clothes washer rebate program grant from the State of California Dept. of Water Resources for $618,750. This grant is expected to commence during FY 03-04. Until this grant begins, the district is continuing to offer a $75 rebate from ENERGY STAR® machines.

Residential Ultra-Low-Flush Toilet (ULFT) Replacement Program

The district has been administering a ULFT program for single- and muti- family dwellings since 1992. Originally administered through rebates, the program has evolved into direct installations. Over 11,000 units were installed during FY 02-03, bringing the total savings to 13,500 acre-feet per year.

During FY 01-02, the district introduced the Community Partnership Program, which provides free ULFTs and installation for elderly, disabled, and/or low-income residents who otherwise would have difficulty replacing their toilets. This program continued through FY 02-03.

The district also continued to cost-share with City of Sunnyvale and the City of San Jose to maximize efficiencies in program implementation and administration.



Santa Clara Valley Water District

Water Use Efficiency

CONSERVATION TIMELINE (continued) > > >

- District introduces Water-Wise House Calls Program and Mobile Lab Program
- District begins offering annual irrigation efficiency workshops for growers

1998

Education and outreach to residents

Water Use Efficiency Nursery Program

For the last 5 years, the district has distributed water conservation information through display racks located at county nursery and garden stores. These display racks, which were redesigned in FY 01-02, contain literature pertaining to water-wise gardening, efficient lawn watering, drought resistant plants, drip irrigation and district programs. In FY 02-03, twenty nurseries participated in the program throughout the district's service area.

The district's Water Use Efficiency Nursery Program provides free literature and display racks to local nurseries.

Water-Efficient Landscaping Workshops for Homeowners

The WUE Unit held its eleventh annual Water Efficient Landscaping Workshop series in March over four weekends. The topics were: Selecting Plants for your Water-Wise Garden; Water Efficient Irrigation Design; Water-Wise Garden Design; and Gardening with Natives. The workshops are presented by landscape and irrigation experts each spring to provide practical advice on water-saving gardening. A total of 136 people attended the series of workshops.

Community Events

The WUE Unit promoted water use efficiency at numerous community events in FY 02-03, including the Fall Home and Garden Show, Pumpkins in the Park, the Tri-County Apartment Association Expo, various community Earth Day events, Water Conservation Day at the San Jose Giants, irrigation seminars for landscape professionals, landscaping workshops for homeowners, and many others. These events give the Unit an opportunity to talk to the public directly, educating them about water use efficiency with hands-on displays, educational handouts and free water-efficient device distribution.

Ray Wong and Kevin Galvin promote conservation at a San Jose Giants baseball game.

Summer Water Conservation Campaign

For the last several years, the WUE Unit has been partnering with the Community Relations Unit to develop an annual Summer Water Conservation Campaign. In the summer of 2002, the district conducted a water conservation campaign that included television, radio and newspaper ads. The focus of the campaign was water savings in the garden, which is one of the largest areas of residential water use.

The campaign for the summer of 2003 offered water-saving tips and promoted the district's Water-Wise House Calls Program.

2000

- District introduces Commercial Clothes Washer Rebate Program

2001

- District water conservation and recycling units combine to form Water Use Efficiency unit
- District expands Commercial ULFT Installation Program
- District expands Water Efficient Technologies Program to entire county

> > >

May Water Awareness Campaign

Starting in early 2003, the WUE Unit assisted the Community Relations Unit in developing a May Water Awareness Campaign. The month of May is Water Awareness Month, and to recognize that, the district participated in the State of California's Water Awareness Month campaign. The campaign's main goal was to increase community perception that it is important not to waste water—even when we're not in a drought—and to encourage them to adopt water-efficient behaviors and implement water-saving technologies to help ensure adequate future water supplies.

Publications

GardenSoft CD-ROM Software

The WUE Unit is working with a company called GardenSoft to provide a water-wise gardening CD-ROM tailored to the needs of the district for targeted distribution through workshops or other outreach programs, such as the Water-Wise House Call Program. The CD-ROM will include residential self-audit information, similar to what is included in a Water-Wise House Call, and a plant database specifically for Santa Clara County hot-linked to digital photos of local water-efficient gardens. The software is scheduled for completion in FY 03-04.

Bay Nature Magazine: Gardening for Wildlife with Native Plants

Gardening for Wildlife with Native Plants is a publication of Bay Nature, a quarterly nonprofit magazine. This issue was created with the support of several sponsoring agencies, including the district. The publication is distributed at the WUE Unit's outreach events.

Ongoing publications

The WUE Unit continued to distribute its collection of water use efficiency material to residents and businesses throughout the county. These materials include *Rules of Thumb for Water-Wise Gardening*, *Irrigation Controllers for the Homeowner*, *Drip Irrigation Guidelines*, *Lawn Watering Tips for a Healthy Beautiful Lawn*, Sunset's *Smart Water and Energy Use in the West*, Sunset's *How to Water Your Garden*, Sunset's *Water-Wise Gardening for California*, *Water Wise Leak Fix It Books*, *Gardening For Wildlife with Native Plants*, and *Practical Plumbing Handbook* (in Spanish and English).

Santa Clara Valley Water District

Water Use Efficiency

CONSERVATION TIMELINE (continued) > > >

- District introduces Pre-rinse Sprayer Program for Restaurants
- District employs a third, portable CIMIS weather station
- Water Efficiency Baseline Study commences

2002

Water Conservation in Business

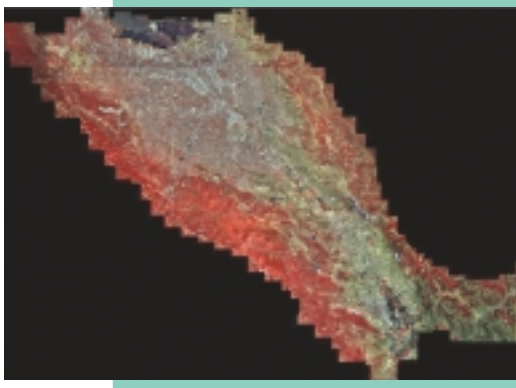
The Water Use Efficiency unit combines education, technical assistance and financial incentives to encourage commercial, industrial and institutional water users to reduce water consumption. Conservation programs help businesses save on water, energy and sewer costs; they also reduce wastewater flows to area treatment plants, protecting the Bay's salt marsh habitats.

Last year, annual water savings attributable to business conservation programs reached 7,104 acre-feet. Whenever possible, the district partners with other agencies and local cities to reduce administrative overhead and enhance the efficiency of programs.

Landscape and Agricultural Area Measurement and Water Use Budgets Study (LAMS)

PHASE I In 2002, the district used multi-spectral images to show landscape and agricultural areas by parcel for over 900 square miles in Santa Clara County. These images were then used to identify areas of turfgrass, trees, landscaping, water features, bare ground and hardscape for each parcel which will then be used to calculate an optimum water budget for sites around the county.

PHASE II Concurrently, the district developed web-based software that allows county water users to receive a site-specific water budget on-line by entering their contact information, meter readings, and other data. (The landscaped areas used to calculate the budget are provided by LAMS Phase I.) This countywide budget database allows on-line users to compare their actual water usage with recommended amounts for their specific area. The district is currently beta-testing the software.



Multi-spectral image of LAMS project area in Santa Clara County.

To provide even greater benefits from the study, the district recently decided to expand the project by creating a statewide, web-based resource. The district, in partnership with Cal-Poly's Irrigation Training and Research Center, will develop software to include water budgeting and scheduling throughout the state. On-line users will be given a schedule—the optimum days and minutes of watering time per week—

- District receives ACWA Theodore Roosevelt Environment Award
- $1.9 million in WUE grants received in FY 02-03
- CII baseline study commences

2003

for their specific landscape, as well as irrigation guidelines and other vital information. The project is scheduled for completion by January 2004.

Irrigation Technical Assistance Program

An ITAP technician evaluates a large landscape for irrigation efficiency.

The district has been providing technical assistance to large landscape managers since 1995 through the Irrigation Technical Assistance Program (ITAP). Technicians providing the free on-site evaluation check the irrigation system for deficiencies, determine an optimum water use budget, and establish an efficient watering schedule.

ITAP participants potentially can save up to 1,500 gallons per day per acre, representing a potential $1,000 per acre cost savings annually. Each year the district recognizes ITAP "Showcase Sites"—attractive landscape areas which demonstrate how improved irrigation efficiency saves money and supports healthy plantings.

The district provided 60 sites with ITAP services last year. Since the program's inception, over 500 parks, golf courses, commercial sites, and residential developments have received ITAP services.

Water Efficient Technologies Program

In FY 02-03, the district expanded the Water Efficient Technologies (WET) program to include Morgan Hill, Gilroy, Palo Alto, Mountain View, Los Altos, Los Altos Hills and Sunnyvale. These cities join the rest of the county in the WET program, which for the last six years has been cost-shared by the district and the City of San Jose Water Efficiency Program for users within the San Jose/Santa Clara Water Pollution Control Plant tributary area only. The district continues to cost-share the program with the City of San Jose, but covers total cost for the program expansion.

A Water Efficient Technology (WET) Program rebate will go to this air-cooled chiller retrofit project at Palo Alto Unified School District.

The WET program offers rebates from between $400 to $50,000 to commercial, industrial and institutional water customers for making process and equipment changes which reduce water use and wastewater flows. Beyond the initial rebate amount, participants continue to save year after year on water and sewer fees; energy and chemical costs may also be reduced.

The District's expanded WET program currently has four water conservation projects underway. Stanford University, Stanford Hospital, Advanced Micro Devices, and Palo Alto Unified School District are all in the final stages of the WET application process and are monitoring the water savings resulting from their projects. Once complete, the WET projects applied for in FY 02-03 will save over 9 million gallons of water annually and result in over $50,000 in rebates.

Stanford University has completed the construction phase of their project which has retrofitted the cooling of research equipment, eliminating "once-through" water use by connecting Stanford's engineering building to the campus's recirculating chilled water system. This project has been estimated to save 7 million gallons of water annually.

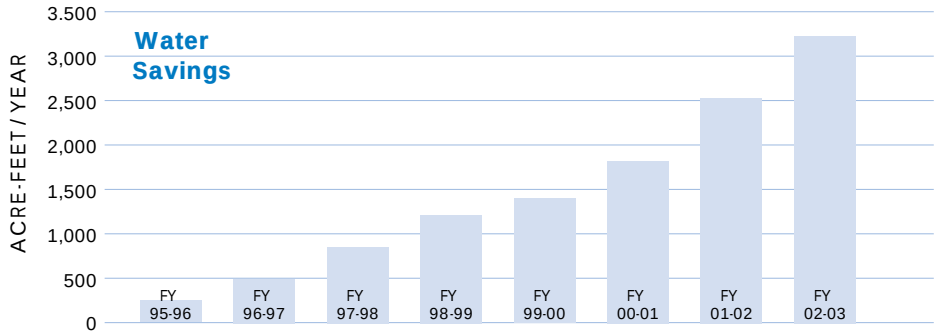
Stanford Hospital, which applied for a rebate in FY 02-03, has overcome some barriers to construction and is currently finalizing retrofitting their x-ray processing machines so that they no longer require water for operation.

Advanced Micro Devices is currently in the monitoring stage of its WET project. AMD has installed two caustic injection systems in its Ultra-Pure Water plant which will result in a projected 984,000 gallons of water saved per year.

Palo Alto Unified School District recently retrofitted one of their school's water-cooled chiller systems with an air-cooled chiller— which requires considerably less water to operate. It is anticipated that this project will result in a savings of over 1,300,000 gallons of water per year.

Stanford University's closed loop cooling system has been projected to save over seven million gallons of water annually.

ITAP (Irrigation Technical Assistance Program) and WET (Water Efficient Technologies) Program



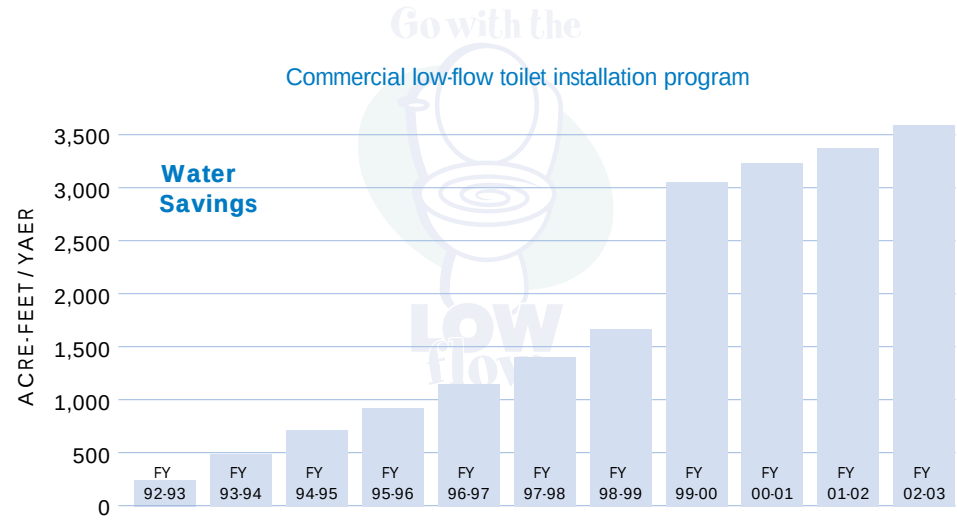
Commercial Ultra-Low Flush Toilet Program

During FY 01-02, the district expanded the commercial ULFT program to provide free installation for restaurants, food stores, wholesale stores, retail stores, and gas stations throughout the county. The district targeted these market segments because these types of businesses save the most water per unit per day. The program provides removal and recycling of old toilets and installation of new ULFTs at no cost to qualifying businesses.

For FY 02-03, the district continued this program and its cost-sharing partnership with the City of San José. The number of ULFTs installed in businesses for this fiscal year was 1,289, with a total cumulative water savings of 3,580 acre-feet per year.

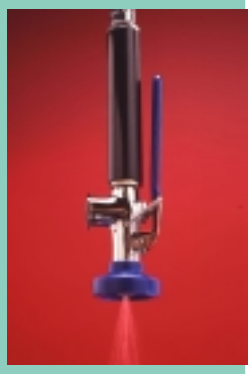
"We are very happy with our new toilets, and they're working just fine. We're saving water— and money on our water bills."

Walter Esaloo,
Papa Murphy's Pizza
San Jose



Pre-Rinse Sprayer Program for Restaurants

"Rinse and Save," a new program designed to save restaurants water and money, began this year. The California Urban Water Conservation Council, with funding from the California Public Utilities Commission, the Santa Clara Valley Water District, and the City of San Jose, offers restaurants within the PG&E territory a free pre-rinse spray valve. These high-efficiency spray valves save an average of 200 gallons of water per unit per day. Each one of these valves is expected to save over 357,000 gallons over the next five year period. Since the program began in January 2003, 588 sprayers have been installed in Santa Clara County.



Restaurants can save an average of 200 gallons of water per day with these high-efficiency spray valves, provided free through the "Rinse & Save" program.

Commercial Clothes Washer Rebate Program

The Commercial Clothes Washer Rebate Program provides laundromats and apartment complexes in Santa Clara County rebates between $275 and $450 for each purchased or leased commercial high-efficiency clothes washer. To help fund the program, the district established cost-sharing agreements with the cities of San Jose, Santa Clara and Palo Alto, the California Water Service Company, and Energy Solutions (through a grant from the California Public Utilities Commission).

In FY 02-03, the Commercial Clothes Washer Rebate Program provided 581 rebates, for a total cumulative water savings of 298 acre-feet per year.

For FY 02-03, the district's commercial clothes washer rebate program provided 581 rebates for apartment complexes and laundromats.

Education and Outreach for Business

Commercial-Industrial Water Efficiency Workshop (Nov. 22)

On November 22, 2002, the district, the City of San José, the San Jose-Santa Clara Water Pollution Control Plant and the Silicon Valley Pollution Prevention Center held a workshop at the district on Commercial-Industrial Water Efficiency. The workshop was targeted toward building owners, property and facility managers, and facility, process and environmental engineers in Santa Clara County. Presentations were made on recycled water, cooling towers, the county's Green Business Certification Program, fab water reuse and case studies and financial incentives available.

Landscape Irrigation Workshops for Professionals (May 8 and 9)

The district has earned a reputation for offering practical, hands-on workshops that increase irrigation efficiency, conserve water, and cut overhead. The annual seminars have waiting lists each year and consistently receive high marks on attendee evaluations.

The district conducts a special one-day water conservation workshop each year for landscape contractors; topics change annually as irrigation issues are identified in the field. In FY 02-03, the workshop covered basic hydraulics of an irrigation system, how to increase distribution uniformity (DU), and common mechanical and electrical problems. The district offers the contractor workshops in both English and Spanish.

Greening Your Bottom Line Workshop (May 12)

On May 12, 2003 the Water Use Efficiency Unit, the San Jose/Santa Clara Water Pollution Control Plant and the Santa Clara County Pollution Prevention and Green Business Programs co-sponsored a workshop for the food service and hospitality industry. The workshop, held at the district, emphasized water use and energy efficiency, pollution prevention and waste reduction.

Water conservation workshops keep landscape professionals up-to-date on water-efficient practices.

Other Outreach Activities

WUE presence at industry events

Water Use Efficiency unit staff regularly attend trade shows and conventions where they promote water conservation, recycling, and District programs through educational displays, publications, and one-on-one contact. For example, the Tri-County Apartment Association Expo is an excellent forum to promote the district's commercial clothes washer rebate program and the Irrigation Technical Assistance Program.

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Targeted mailings

The district actively seeks participants for its water conservation programs by sending targeted mailings to businesses in Santa Clara County that have high water usage. Targeted businesses include commercial laundries, hospitals, restaurants, gas stations, industries with water-dependent processes, and other businesses with high water consumption. The district also places ads and articles in specialized trade magazines.

Sprinkler irrigation near Metcalf Energy Center.

Water Use Efficiency in Agriculture

The district's Water Use Efficiency Unit produces winter and spring growers' meetings and fields a technical assistance program supported by financial incentives to assist growers with improving irrigation practices. District agriculture programs also support the Central Valley Project Improvement Act, an historic compromise between agricultural, urban and environmental interests on the allocation of water resources.

Integrated Irrigation and Fertilizer Management Program

The district began the Mobile Lab Program in 1998 to help growers assess the efficiency of their irrigation and fertilization practices. The program also provides compliance with the Central Valley Project Improvement Act. The Mobile Lab program has provided 156 on-site evaluations to 67 growers since its inception. This represents a total of 2,923 acres. Potential annual water savings of 2,412 acre-feet have been identified.

Financial incentive is provided in the form of discounts of the groundwater withdrawal fees. Mobile Lab provides free on-site pump and irrigation system evaluations to farmers and greenhouse operators. Technicians measure pumping plant efficiency and the distribution uniformity of irrigation systems.

At the end of the 02-03 fiscal year, the program combined with the In-field Nutrient Assessment Assistance Program in recognition of the close relationship between fertilizer use efficiency and irrigation management. When the Mobile Lab became one component of the integrated Irrigation and Fertilizer Management Program, it increased the evaluations carried out in support of fertilizer use efficiency consultations. Correspondingly, the fertilizer management component

of the integrated program has become more active in advising on irrigation scheduling. Growers increase the efficiency of their water use through improvements in irrigation scheduling, and are then able to increase the efficiency of plant fertilizer uptake. This will reduce the amount of nitrogenous fertilizer leaching to the groundwater. A long range goal of the program is to promote the efficient use of recycled water for agricultural irrigation.

California Irrigation Management Information System (CIMIS)

This valuable free service provides daily reference crop evapotranspiration data used by growers and landscape irrigators for scheduling. The district owns and maintains two CIMIS weather stations in Santa Clara County. One is active at Live Oak High School in Morgan Hill (since 1997), and one was decommissioned in November 2002, pending relocation. The latter station had been active since 1987 at the former University of California field station in San Jose. The weather stations measure sunlight intensity, humidity, wind and temperature hourly to estimate reference evapotranspiration.

The district's CIMIS stations are part of a statewide network of stations from which the California Department of Water Resources' (DWR) central computer downloads data nightly. Growers and landscape irrigators can access current irrigation scheduling information around the clock by visiting the district website at www.valleywater.org.

The district also participates in gathering weather data from so-called "non-ideal" sites. These are sites throughout the county (and the State) which do not meet the specifications for CIMIS stations. Non-ideal sites are related mathematically to their nearest CIMIS site, and this relation provides a means of making evapotranspiration data site specific. This long-range project will give landscape managers in local microclimates more accurate data for their irrigation decisions.

The district owns and maintains two CIMIS weather stations which provide growers with information to make efficient water scheduling decisions.

Education and Outreach for Agriculture

Seminars for Agriculture Professionals

Since 1998, the district has been presenting two workshops annually for growers—one in April and one in December—on topics relating to water and fertilizer use efficiency, district programs, farm safety and legal compliance. All workshops were presented with real time Spanish translation. In December 2002, the district participated with the Santa Clara County Agricultural Commissioner's Office in presenting an irrigation and worker safety meeting for Cantonese speakers at the Bay Area Chrysanthemum Growers Association.

December 2002 seminar topics were: irrigation efficiency and groundwater withdrawal fee discounts; West Nile virus; spray equipment calibration; and personal protective equipment requirements. The April 2003 seminar topics were: irrigation information specific to alfalfa, grapes and vegetables; a broad overview of plant nutrient uptake; and a talk on plant uptake of perchlorate. This last topic was in response to growers' need for information following discovery of perchlorate in south county groundwater and was presented by Dr. Andrew Jackson of Texas Tech University's Institute of Environmental and Human Health.

These seminars provide continuing education credits for growers' Private Applicator Certificates. Ongoing partners in providing the workshops are: the University of California Cooperative Extension, the Natural Resources Conservation Service, the California State Department of Pesticide Regulation and the Santa Clara County Agricultural Commissioner's office.

Cucumbers irrigated with tertiary treated recycled water near SCRWA.

WUE PROGRAM PERFORMANCE:

Water Recycling

OVERVIEW

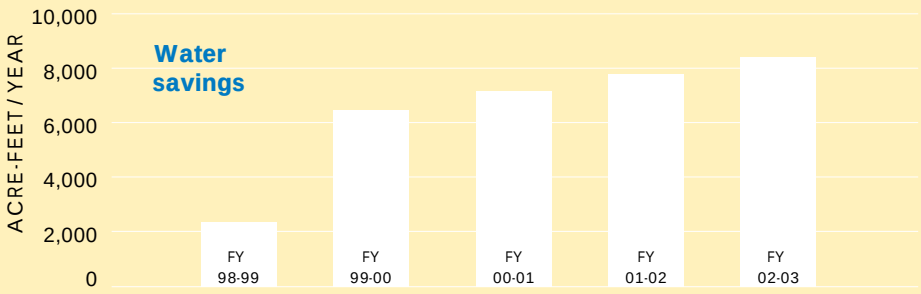
District projections show that before the year 2020, Santa Clara County will likely experience a 100,000 acre-foot water shortage during critically dry years. Along with water conservation, water recycling is identified in the district's Integrated Water Resources Planning (IWRP) document as a key component in meeting this shortfall. Recycled water is a drought-proof resource. Using recycled water for irrigation and other uses frees up potable water for urban use, and protects the Bay's salt marsh habitat by reducing freshwater effluent released from wastewater treatment facilities.

The district Board's Ends Policies state that recycled water use will make up 5 percent of total county water use (20,000 AFY) by 2010, and 10 percent of total water use (45,000 AFY) by 2020. These targets are reviewed annually by the Board. During the past four years (1999 through 2003), recycled water use in the county has surpassed the interim target.

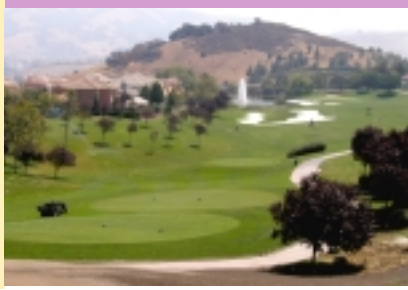
The district's current approach is to develop partnerships with the cities and publicly-owned agencies that produce and/or distribute recycled water. By laying the groundwork for new programs and studying recycled water uses and issues, the district will be ready to create partnerships and systematically expand the countywide water recycling system. Being prepared for expansion will be critical during drought years when demand for recycled water is likely to increase.

The district has entered recycling partnerships with three of the four recycled water producers in Santa Clara County: the South Bay Water Recycling Program (SBWRP) operating out of the San Jose/Santa Clara Water Pollution Control Plant, the Sunnyvale Water Pollution Control Plant (Sunnyvale WPCP) and the South County Regional Wastewater Authority (SCRWA) which is located in the City of Gilroy. The district is pursuing a greater involvement with recycling programs for one remaining producer: the Palo Alto Regional Water Quality Control Plant (Palo Alto RWQCP).

Total volume of recycled water use in Santa Clara County



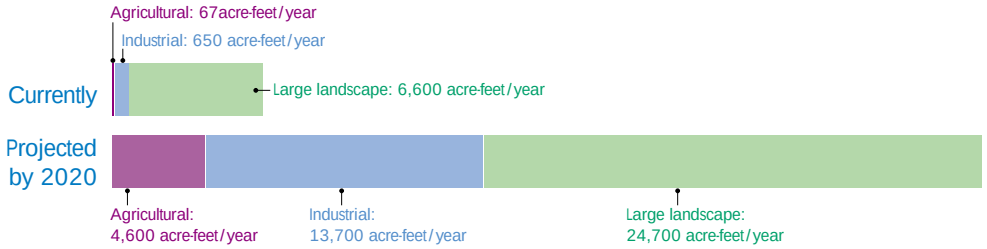
Silver Creek Golf Course irrigating with recycled water.



Countywide total recycled water use / total water use (acre-feet / year)

FISCAL YEAR	SOUTH BAY WATER RECYCLING PROGRAM	SUNNYVALE WATER POLLUTION CONTROL PLANT	SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY	PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT	TOTAL RECYCLED WATER USED IN COUNTY	% OF TOTAL WATER SUPPLY
98-99	2,357	0	—	—	**2,357**	0.42%
99-00	5,002	439	896	63	**6,401**	0.64%
00-01	5,409	944	708	63	**7,124**	1.64%
01-02	6,037	1,210	487	66	**7,800**	1.73%
02-03	6,177	1,602	536	53	**8,368**	2.08%

Recycled water use: Current and projected



Currently the majority of recycled water is used for parks, golf courses and other large landscape irrigation.

South Bay Water Recycling Program

The South Bay Water Recycling Program produces the majority of all the recycled water delivered within Santa Clara County. From July 1, 2002 through June 30, 2003 (fiscal year 2002-2003) the South Bay Water Recycling Program produced 6,180 of the total 8,274 acre-feet of recycled water used in the county. The SBWRP was created to reduce the environmental impact of freshwater effluent discharge into the salt marshes of the south end of San Francisco Bay, and to help protect two endangered species: the California clapper rail and the salt marsh harvest mouse. The state requires that the San Jose/Santa Clara Water Pollution Control Plant keep summer wastewater flows below 120 million gallons per day.

The district has been working with the City of San Jose on its recycled water program since 1994, providing financial and technical support for system expansion, and acting as a liaison with water retailers. The

Santa Clara Valley Water District

Water Use Efficiency

RECYCLING TIMELINE

- **1975** District conducts water recycling feasibility study with the City of Palo Alto
- **1977** District and City of Gilroy build recycled water system
- **1994** District partners with San Jose on the planning of South Bay Water Recycling Program (SBWRP)

> > >

district also subsidizes the SBWRP at the current rate of $115 per acre-foot of recycled water produced and utilized for non-potable applications to offset potable water use in the county. The district has been providing a financial incentive since 1998. The partnership between The district and the City of San José provide for the distribution of recycled water within the cities of San José, Santa Clara and Milpitas.

In January 2002, the San José City Council and District Board of Directors agreed to develop an institutional framework for the long-term ownership, operation, maintenance, and future expansion of South Bay Water Recycling that most effectively meets the needs of the community. This collaborative effort will define the relationship between the district and the SBWRP, and will help balance the water supply and wastewater discharge needs of the South Bay community, now and in the future. Several meetings have already been held in this collaborative effort and substantial progress has been made; meetings will continue into FY 02-03.

South Bay Water Recycling Program Capital Projects

SBWRP Phase I

Phase I of SBWRP construction—completed in 1999 at a cost of $140 million—consists of nearly 60 miles of pipeline, four pump stations, and a reservoir. The system is capable of delivering 21 million gallons per day (MGD) and so far has had deliveries up to 10 MGD on hot summer days. It serves over 350 customers, mainly for landscape irrigation at parks, schools, and golf courses. Recycled water is also used in some local industrial cooling towers.

SBWRP Phase II

San Jose approved an $82.5 million Phase 2 expansion of the SBWRP in June 2001. The expansion includes additional pipeline extensions into Santa Clara and Milpitas, construction of the Silver Creek Pipeline into Coyote Valley in south San Jose, and additional reservoirs and operational improvements to several pump stations to increase the system's reliability.

Silver Creek Pipeline Extension

As part of the agreement with the SBWRP, the district will cost-share $6.8 million, or approximately 25% of the total cost of the Silver Creek Pipeline extension. This pipeline will deliver recycled water to the

The Silver Creek pipeline, currently in construction, will deliver recycled water to the Metcalf Energy Center, a new Calpine power plant being built in Coyote Valley.

- District agrees to reimburse the City of Santa Clara for recycled water delivered

1995

- Integrated Water Resources Plan adopted by Board with goals to increase county water recycling and conservation

1996

- District increases recycled water subsidy to $115 per acre-foot
- District begins subsidizing City of Sunnyvale recycled water program
- Phase 1 of South Bay Water Recycling Program completed

1997

> > >

The Villages Golf Course in the Evergreen area uses recycled water for irrigation and water features.

Recycled Water in Santa Clara Valley

Santa Clara Valley Water District

Water Use Efficiency > > >

RECYCLING TIMELINE (continued)

1999

- District and City of Gilroy partner to upgrade South County Recycled Water system
- Recycled water use in Santa Clara County totals 2,357 acre-feet for FY 98-99

2000

- Recycled water use in Santa Clara County totals 6,401 acre-feet for FY 99-00

Metcalf Energy Center, a new Calpine power plant being built in the north end of Coyote Valley. The power plant is expected to use an average of 4,000 acre-feet of recycled water per year. Pipeline capacity that exceeds the needs of the power plant will be available to the district . The target date for completion is spring of 2004. The district is also developing plans to extend the system further south in the future to serve recycled water to golf courses and agricultural customers in the Morgan Hill and Gilroy areas.

South County Recycled Water control station

South County Recycled Water

In 1977 the district, the City of Gilroy, and the Gavilan Water Conservation District began a partnership to construct and operate a recycled water system extending from the South County Regional Wastewater Authority (SCRWA) treatment plant southeast of Gilroy to several customers along Hecker Pass Road. The system operated sporadically for about 20 years.

In 1999, the district, SCRWA, and the City of Gilroy entered a partnership agreement to develop a marketable water recycling program in south county and provide for future expansions of the treatment plant and delivery system. Under this agreement, SCRWA serves as the supplier, the district is the wholesaler, and the City of Gilroy is the retailer. The recycled water delivery system in south county is now referred to as the South County Recycled Water system. Currently, the district takes delivery of the recycled water at the SCRWA treatment plant in southeast Gilroy and pumps it through a distribution system to a city park and a championship golf course in southwest Gilroy. Last year the system delivered 495 acre-feet of recycled water to irrigators.

South County Recycled Water Projects

Upgrade of SCRWA system

The district's current agreement with the City of Gilroy and SCRWA includes an upgrade of the 25-year old system, which delivers recycled water to south Gilroy. SCRWA treatment plant has a peak production potential of 3 MGD, making it capable of delivering about 2,400 acre-feet per year to golf courses, parks, and farmland along its eight-mile length. Last year the system delivered 495 acre-feet of recycled water

Improvements to several system pump stations was part of the district's agreement with South bay Recycled Water Program. This pump station, located near San Jose State University, was designed to reflect the architecture in the area.

2001
- District begins Advanced Water Treatment Study
- $82.5 million SBWRP Phase 2 expansion approved
- Recycled water use in Santa Clara County totals 7,124 acre-feet in FY 00-01

2002
- District and City of San José enter agreement for long-term ownership of SBWRP
- Construction of new booster pump station, reservoir, and pipeline extension completed for South County Recycled Water system

2003
- District and City of San José establish collaborative effort to expand recycled water use.
- Construction of the Silver Creek Pipeline extension begins
- Recycled water use in Santa Clara County totals 8,368 acre-feet in FY 02-03

The district constructed a new turnout to deliver recycled water to a farmer who has been using recycled water to irrigate crops for several years.

to irrigators, thus freeing up the same amount of potable water for consumption.

System expansion

In summer 2002, the district started the operation of the booster pump station at Christmas Hill Ranch Park and the 1.5 million gallon concrete reservoir above Eagle Ridge Golf Club. In spring 2003, the district also completed the rehabilitation of the 30-year old pipelines.

Recycled water supply to energy plant

The district and the City of Gilroy successfully negotiated with Calpine to use recycled water for its new energy plant's cooling towers. Calpine completed a 1500-foot 12" pipeline in order to receive recycled water. This pipeline will be dedicated to the district.

South County Water Master Plan

The district and the City of Gilroy entered into a consultant service contract with Carollo Engineers to develop the South County Recycled Water Master Plan, which will identify short term and long term capital improvement projects for recycled water expansion.

Palo Alto and Sunnyvale

Recycled Water Master Plan for Palo Alto RWQCP service area

The district has attended planning meetings with the Palo Alto Regional Water Quality Control Plant (RWQCP) and their stakeholders to help develop a long-term master plan for the future of recycled water in their service area. Once this plan is developed, the district will define its role in supporting Palo Alto RWQCP recycling goals, which include a possible system expansion and grant applications for feasibility studies. The RWQCP serves Palo Alto, Mountain View, Los Altos, Los Altos Hills, Stanford University and the East Palo Alto Sanitary District.

Support for Sunnyvale WPCP

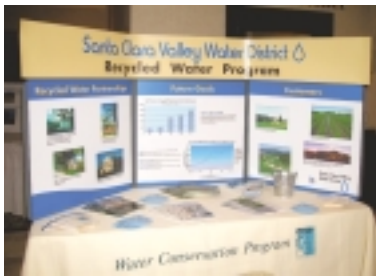
The district has been providing financial support for the Sunnyvale Water Pollution Control Plant's (WPCP) water recycling program since 1997 at the rate of $115 per acre-foot of recycled water used that offset potable water use. The reimbursement agreement that covered the period from 1997-2002 came to a close and the district signed a continuation agreement for another 3-year period through June 2005. The Sunnyvale WPCP is planning to expand its water recycling systems in order to meet state and federal discharge requirements. The district will continue to promote dialogue and provide support for expanding the programs whenever possible.

Water Recycling Outreach and Education

Networking with cities and treatment plants

The district networks with area cities and wastewater treatment plants to ensure that the cost of future water supply and sewage treatment is balanced to provide the most efficient use of resources for the community. The district also provides staff support for its Water Retailer's Recycling Subcommittee, Agricultural Water Advisory Committee, and Landscape Advisory Committee. Staff members also track technical and regulatory developments that affect the production and use of recycled water, and participate in statewide recycling organizations and activities.

Publishing information on water recycling



The district and the SBWRP have produced a public education handout, *The South Bay Water Challenge*, to inform residents about the uses of recycled water and the environmental impact of wastewater discharge into the Bay. The district also promotes water recycling at community events with hands-on displays and educational literature. Recycling information is also available on the District's website at www.valleywater.org.

APWT Feasibility Project

The District has held a series of four stakeholder group meetings on this project, beginning in late 2001 through 2002. The purpose of these focus groups was to identify the potential markets for advanced treated recycled water, as well as the potential constraints in each of those markets. A fifth joint stakeholder meeting was held in September 2003. The purpose of this workshop was to help the District evaluate alternative advanced treated recycled water demonstration/pilot projects that are being considered by the District. The workshops were interactive, with dialogue between stakeholders from the four market sectors previously identified as holding potential for use of advanced treated recycled water: i.e. large landscape, agricultural, industrial and environmental.

Outreach and public education are greatly enhanced by the successful implementation of recycled water projects.

New recycled water brochure

In May 03 the district published *Recycled Water,* with the general public as its target audience. It includes information on what recycled water is, how it is produced, and the benefits of recycled water – all presented in a colorful and easy-to-read format.

WATER USE EFFICIENCY:

Program Drivers, Partnerships and Grants

WUE Program Drivers

The water conservation and recycling programs in the District's WUE unit reduce demands placed on existing water supplies, helping to defer the cost and environmental impact of developing additional supplies. The programs also protect the South Bay salt marsh habitat by reducing freshwater effluent released from wastewater treatment facilities.

Various drivers facilitate the district's water use efficiency goals. Efforts are helped by ongoing partnerships that allow local agencies, cities, stakeholders and water customers to work together for the good of all. Listed below are the main drivers which support the District's water conservation and recycling programs.

District Board of Directors Ends Policy

The district Board of Directors Ends Policy No. E-2.1. states, "There is a reliable supply of healthy, clean drinking water." Under this Ends Policy, it also states that "The water supply is reliable to meet current demands" (E-2.1.2.), and "The water supply is reliable to meet future demands as identified in the District's Integrated Water Resource (IWRP) process."

Ends Policy E-2.1.6. states, "Water recycling is expanded within Santa Clara County in partnership with the community, consistent with the district's Integrated Water Resources Planning (IWRP), reflecting its comparative cost assessments and other Board policies." Targets indicated by this Ends Policy include water recycling accounting for five percent of total water use by 2010 in Santa Clara County, and ten percent of total water use by 2020.

District Integrated Water Resources Planning

The Integrated Water Resources Planning (IWRP) document, developed with input from local stakeholders, is the district's primary

water supply management planning tool. The IWRP identifies maintaining a diversified water portfolio as an important element in meeting long term water reliability, and local programs such as water use efficiency are recommended ways to diversify future investments. IWRP 2003 recommendations include a goal of 92,000 acre-feet in water conservation savings by year 2020 (as measured from a 1992 datum, the start of the District's water conservation programs), and 20,000 acre-feet of recycled water by year 2010.

Memorandum of Understanding with the California Urban Water Conservation Council (CUWCC)

Besides these internal mandates for water conservation and recycling, state and federal mandates also commit the district to implement specific urban and agricultural water efficiency programs. The district was one of the first signatories to the voluntary CUWCC 1991 Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which instituted conservation Best Management Practices (BMPs). As a water wholesaler, the district assists water retailers in implementing the BMPs.

CALFED Bay-Delta Program

WUE conservation and recycling programs also support the CALFED Bay-Delta Program, a coalition of stakeholders and local, state and federal agencies to develop a long-term plan to restore the San Francisco Bay/Sacramento- San Joaquin Delta estuary ecosystem. More than half the water used in Santa Clara County is imported from this source. To sustain wetland health, the state has established limits for wastewater flow discharged into the Bay-Delta. Exceeding these caps could trigger a halt to future housing, retail, and commercial growth in Silicon Valley. WUE programs reduce freshwater effluent discharge into the sensitive salt marsh habitat of the Bay, helping to protect habitat and the county's economy.

Central Valley Project Improvement Act

The 1992 Central Valley Project Improvement Act (CVPIA) mandated reforms in the operation and management of the federal and state Central Valley Project, which supplies Sacramento River basin water to the San Francisco Bay area. The CVPIA established incentives for contractors to renew their water service contracts, and the district signed a binding agreement in 1997 to negotiate these renewals. Delivery of water under the Mercy Springs Joint Assignment Agreement, executed on May 19, 1999, became contingent on the requirement that the district Board prepare a CVPIA Water Conservation Plan that meets U.S. Bureau of Reclamation criteria. The Mobile Lab Program was specifically designed to comply with the CVPIA.

District Partnerships

To conserve water and meet future demand for recycled water, the district actively pursues partnerships with area cities and wastewater treatment facilities to expand the county's recycled water systems. In addition, water retailers and the district have a cooperative partnership that helps retailers fulfill the Best Management Practices of the 1991 MOU. Besides these entities, some of the most vital district partnerships are with the residential, commercial and agricultural customers who conserve by updating water use devices and implementing water efficient practices.

The City of San José–South Bay Water Recycling Collaborative Effort was established to develop a partnership with South Bay Water Recycling that provides the most efficient services and expands recycled water use within and beyond the San José and Santa Clara recycled water service area.

The district collaborates with universities and state agencies to provide large landscape managers and agricultural water users with professional workshops that help them increase irrigation efficiency. These partnerships also support the California Irrigation Management Information System, which provides growers with climatic data to make efficient irrigation scheduling decisions. The district also provides staff support for its Water Retailer's Recycling Subcommittee, Agricultural Water Advisory Committee, and Landscape Advisory Committee. In addition, WUE staff members participate in statewide conservation and recycling organizations.

Cost-Sharing Agreements for FY 02-03

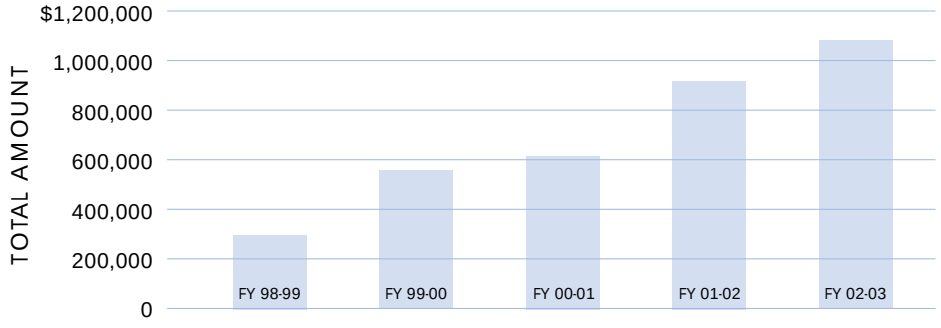
Water use efficiency is a community-wide effort, and it will take the cooperation of many agencies and organizations to meet future water supply goals. The district maintains cost-sharing agreements with many area cities and utilities to provide water use efficiency programs for residential and commercial water customers.

In FY 2002-2003 the Water Use Efficiency Unit negotiated a record-breaking $1,083,855 in cost-sharing agreements. These agreements include:

- City of Palo Alto:
  Cost-sharing agreement for $106,480 for various water conservation programs.

- City of Santa Clara:
  Cost-sharing agreement for $12,500 for commercial high-efficiency clothes washer rebates.
- Energy Solutions:
  Cost-sharing agreement for $150,000 for commercial high-efficiency clothes washers. This amount is funded by a grant given to Energy Solutions by the California Public Utilities Commission.
- California Urban Water Conservation Council:
  Cost sharing agreement for $53,500 for the High-Efficiency Pre-Rinse Spray Valve Installation Program.
- City of San José:
  Cost-sharing agreement for $661,125 for various district programs; the district agreed to pay the City of San José $562,500 for water conservation programs they administer.
- City of Sunnyvale:
  Cost-sharing agreement for $150,000 for residential and commercial ULFT programs.
- California Water Service Co:
  Cost-sharing agreement for $3,750 for commercial high-efficiency clothes washers.

Cost-sharing agreements
between the district WUE Unit and other cities/agencies



California Urban Water Conservation Council
Best Management Practices (BMPs)
for Urban Water Conservation

BMP 1
Residential Water Surveys

BMP 2
Residential Plumbing Retrofits

BMP 3
System Water Audits

BMP 4
Metering with Commodity Rates

BMP 5
Large Landscape Conservation Programs and Incentives

BMP 6
High-efficiency Clothes Washers

BMP 7
Public Information Programs

BMP 8
School Education Programs

BMP 9
Industrial, Commercial, and Institutional Conservation

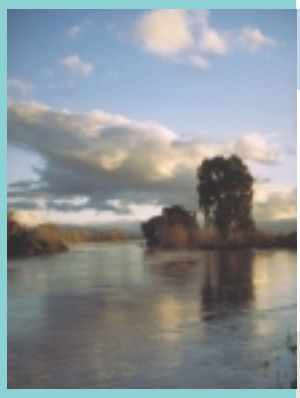
BMP 10
Wholesale Agency Assistance

BMP 11
Conservation Pricing

BMP 12
Conservation Coordinator

BMP 13
Water Waste Prohibition

BMP 14
Residential ULFT Replacement



Grants

The district also relies on grants from state and federal agencies to help fund program expansion and vital research. The WUE unit received six grants last year totaling $2,677,750 to fund water use efficiency programs and studies.

Water Use Efficiency Grant Awards

PROGRAM	DESCRIPTION	GRANT AWARD
Irrigation Systems Hardware Upgrade	Provides upgraded irrigation hardware	**$100,000**
Innovative High-Efficiency Commercial Equipment Retrofits	Replaces commercial equipment with water-efficient models	**$496,000**
Evapo-Transpiration (ET) Controller Retrofit Program	Replaces standard irrigation controllers with self-adjusting ET controllers at residential and commercial sites	**$646,000**
Residential Clothes Washer Rebate Program	Residential rebates for EnergyStar® clothes washers	**$618,750**
Water Use Surveys	On-site water-use surveys at businesses and factories to determine ways to save water, energy and money	**$100,000**
Desalination Research	Research on removing dissolved salts and other contaminants from water	**$717,000**
	TOTAL	**$2,677,750**

California Department of Water Resources Prop 13 Urban Water Conservation Grants

- $100,000 to fund an Irrigation Systems Hardware Upgrades Program for Santa Clara County. This project is targeted at installing upgraded irrigation hardware for sites previously identified as having high unrealized conservation potential in the district's Irrigation Technical Assistance Program (ITAP).

- $496,000 to fund an Innovative High-Efficiency Commercial Equipment Retrofits Program for Santa Clara County, including high-efficiency x-ray equipment for the health care industry, dry vacuums for dental offices, and high-efficiency plumbing fixtures in commercial establishments.

- $646,000 to fund a regional program that brings together state-wide water agencies and targets the replacement of standard irrigation controllers with self-adjusting, EvapoTranspiration (ET) controllers at residential and commercial sites.

- $618,750 to fund a regional Residential High-Efficiency Clothes Washer Rebate Program for Santa Clara County. This project will provide rebate funding for residents who purchase high-efficiency clothes washers.

California Department of Water Resources Grant

- The Department of Water Resources is granting the district $100,000 to offer commercial, industrial and Institutional water use surveys to its businesses in Santa Clara County. For this program, a water use efficiency expert will conduct an on-site water use survey of businesses or factories. The result of the water use surveys should help companies identify how to save water, energy and money.

Desalination Research Grant

- The district is participating in desalination research in a partnership with Metropolitan Water District (MWD) of southern California and six other leading water agencies and universities in California. This partnership, known as DRIP (Desalination Research Innovative Partnership), will explore aspects of removing salts and other contaminants from water so it may be recycled. The grant monies to the district total $717,000, and come from the Environmental Protection Agency, Department of Water Resources and the California Energy Commission.

Grant funds are being made available for sites identified through the ITAP program for hardware upgrades.

PLANNING AHEAD:

Studies and Research

The district is continually conducting research, on its own and in collaboration with other agencies, to increase water savings and cost-effectiveness in its water conservation programs. At the same time, the district's recycling research is exploring new uses for recycled water, while helping ensure that groundwater and the environment are protected. Data from the studies and research listed below will be vital in creating an effective, long-range water management strategy for Santa Clara County.

Studies and Research: Water Conservation

The district is continually striving to gain reliable information on how and why conservation programs work most efficiently. Ongoing research helps us evaluate the cost-effectiveness of our programs as well as test new programs and water-saving devices as they become available.

How do the attitudes and practices of residential, business, and agricultural customers affect their water use? Which programs and users have the greatest water savings potential? How can we use the latest technology to give customers the water conservation tools they need? These are just a few of the important issues being explored in the following studies.

Water Use Efficiency Baseline Studies:
Phase I: Residential
Phase II: Commercial, Industrial and Institutional

The Water Use Efficiency Baseline Studies are designed to give the district a better understanding of its customers' attitudes and practices regarding water conservation. The studies' results will help the district establish a baseline from which future water savings can be measured, and determine the penetration of water-using hardware and appliances within the district's water service area.

These comprehensive studies will provide the specific data needed to write the Water Use Efficiency Master Plan and streamline the district's WUE programs for effective long-term water conservation. The project is necessary to determine specifically where the district has been successful in implementing conservation measures over the past decade, areas that need improvement or emphasis, and how best

to continue the program in the future.

In FY 02-03 the district implemented the *Residential Water Use Conservation Baseline Study* as a Phase I project. The final report will be available in Fall 2003.

At the end of FY 02-03, the district initiated Phase 2: the *Water Use and Conservation Baseline Study* for the commercial, industrial and institutional sectors. This study will be complete in August 2004.

Irrigation Submeter Study

Last fiscal year the district began collecting data for its Irrigation Submeter Study. In FY 00-01, the district provided submeters to three large landscape property owners—two homeowners associations and a commercial business park—which allowed them to monitor water used in the site's irrigation systems. The district will continue to collect data for five years, then analyze it for water savings, and to determine whether the program merits expansion.

Commercial Clothes Washer Rebate Program Study

In FY 02-03, the WUE Unit began collecting data for its Commercial Clothes Washer Rebate Program Study. The goal of this study is to determine water and sewer savings that have occurred as a result of the high-efficiency washers being installed in Santa Clara County. In addition, important aspects that will be discussed are the effectiveness of the rebate program, participant's satisfaction with the program, and user's satisfaction with the high-efficiency machines. The equipment saturation rate for the county is also examined within the report. This study is expected to be completed by January, 2004.

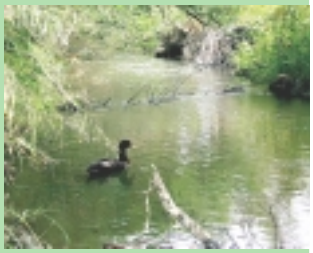
Dual-flush Toilet Pilot Study

The district will start a pilot program in FY 03-04 to evaluate a dual-flush toilet which is already being used in Australia, New Zealand, and other areas with serious water shortages. The dual-flush toilet allows users to choose either a partial, .8-gallon flush or a full 1.6 gallon flush, depending on need.

Studies and Research: Water Recycling

District governance policies call for the expansion of water recycling in Santa Clara County, while at the same time ensuring that groundwater basins are protected from threat of contamination.

To fulfill these goals, the district is working to identify new markets and uses for recycled water, while also conducting research to evaluate the effects that existing and planned recycled water projects may



While recycled water is currently used for large landscape irrigation, agriculture, and some industrial processes, it may also have environmental uses for recharging streams, reservoirs and wetlands.

have on groundwater quality. While recycled water is currently used for large landscape irrigation, agriculture, and some industrial processes, it may also have environmental uses for recharging streams, reservoirs and wetlands. Expanding recycled water applications will require increased monitoring of soil and groundwater quality parameters, as well as advanced levels of treatment depending on where and how recycled water is used.

Research will also investigate potential treatment methods to expand water recycling options and protect groundwater. Current research studies are described below.

Advanced Recycled Water Treatment Feasibility Project

The district is currently conducting a feasibility study that will identify markets for advanced treated recycled water in industry, agriculture, large landscaping and environmental enhancement, including wetlands development and aquatic habitat maintenance. Recycled water from area recycled water treatment plants was sampled and analyzed for a wide range of constituents to assess its applicability to various markets. The study will examine the different uses of advanced treated recycled water and identify feasible water quality standards that protect the county's groundwater and environmental resources.

The study is being conducted with participation from stakeholders such as environmental groups, water retailers and local agencies, as well as representatives from homeowner associations and the business/industrial and agricultural community. Results from this study will help develop viable advanced treatment pilot/demonstration or full-sized plants which will serve to expand the use of recycled water in this county. (Timeline: January 2002- January 2005.)

Characterization of Salinity Contributions in Sewer Collection and Reclaimed Water Systems

The district is participating in this nationwide study which will determine the amounts of salt contributed to reclaimed water systems by different sectors, specifically residential users, restaurants, and industrial/commercial operations. The district is funding this cooperative study along with participating agencies nationwide. (Timeline: May 2002 to March 2004.)

Desalination Pilot Advanced Treatment Project: Electrodialysis Reversal/ Reverse Osmosis (EDR/RO) Comparison Pilot Study

The district has developed agreements with the City of San Jose and Metropolitan Water District of Southern California to support and participate in this study to investigate the desalination capabilities of reverse osmosis and electrodialysis equipment, focusing on the removal of dissolved solids from recycled water. The study will demon

strate the technical feasibility of advanced water treatment as well as provide detailed cost data useful in planning for larger treatment works. (Timeline: April 2003- Spring 2004.)

Evaluation of Geochemical Reactions between Recycled Water and Soil Minerals

This study evaluated the effect of recycled water on soils in Santa Clara County, including its impact on soil permeability and erosion. (Approximate timeline: July 2002 to September 2003.)

Evaluation of Potential Impacts from Salt Loading on Groundwater Quality

The usefulness of a basin scale salt balance was investigated to determine if it would help clarify the impact on water quality of expanded recycled water use. A preliminary evaluation was completed in July 2003. The study concluded that a basin scale salt balance was an appropriate tool to inform recycled water deployment decisions.

Groundwater Monitoring

The district continually monitors groundwater quality and is expanding its monitoring network to target areas where recycled water is used for irrigation. The monitoring data will be used to detect and correct potential problems early on, before they have a chance to develop. (Timeline: ongoing.)

Movement and Characteristics of Chemicals

The district is conducting research studies, including a collaborative study with a number of other water agencies, to investigate the movement and characteristics of chemicals in recycled water used for irrigation. (Approximate timeline: August 2002 to September 2004.)

Study to Evaluate Redwood Decline

Decline of mature redwood trees, including foliar and branch necrosis, has been observed at a number of sites in Santa Clara County. Some, but not all, are irrigated with recycled water. It has been suggested that there may be a correlation among higher salt concentrations in recycled water, landscape management practices and the observed symptoms.

The district is interested in determining the degree to which the decline may be attributed to higher salt levels from recycled water use. The study is also investigating how to reverse the decline and restore the health of local redwoods.

Water Softener Replacement Pilot Program Study

This pilot study is designed to help the district to assess the types of outreach programs and incentive offers required to convince customers to use more efficient water softening technology, thereby reducing harmful salt concentrations in wastewater and conserving potable water. (Approximate timeline: Nov. 2003 to Nov. 2004.)

Desalination

In early 2003, three partner agencies (Santa Clara Valley Water District, East Bay Municipal Utility District and San Francisco Public Utilities Commission) agreed to jointly pursue, at the pre-feasibility level, the viability of a regional desalination facility in this region to meet their water supply needs. Shortly after initial agreements were negotiated and signed for cost sharing and consultant work, a fourth partner agency, Contra Costa Water District, joined and negotiations proceeded to include this fourth partner agency in this "Pre-Feasibility Project".

The scope of the Pre-Feasibility Project includes: determining project understanding from the partner agencies perspective, permitting requirements for a regional desalination facility, product water quality, preliminary siting study, cost estimation, preparation of a final pre-feasibility report, project management and coordination with the four agencies, quality assurance and control functions and preparation of the grant workplan when Proposition 50, or Water Resources Development Act or Bureau of Reclamation Grant Fund criteria are established.

The District is evaluating desalination in the context of desalination being one of the District's building blocks in its long-term water supply portfolio. Staff from the Water Use Efficiency Unit is currently working with staff from the other partner water agencies in this effort.

An evapo-transpiration (ET) controller is installed at a residence by district employee Kevin Galvin.

Future Projects: Water Conservation

ET Controllers Program

The WUE Unit is developing a new program that will utilize weather-based irrigation scheduling in managing plant water requirements in landscaping. The application of high tech irrigation controllers (ET Controllers) is very promising, since as much as 50% of total residential water usage is applied outdoors. The technology is a new type of irrigation controller that utilizes data from several environmental factors, including temperature, relative humidity, wind speed, and solar radiation. The plant water requirement, otherwise known as reference evapotranspiration, can then be calculated and utilized by individual irrigation controllers that will automatically adjust irrigation schedules accordingly. The program, which will target both residential and commercial high water users, will be in place in FY 03-04.

Dedicated Landscape Meter Program

The WUE Unit has been awarded a Proposition 13 Urban Water Conservation Program Grant from the California Department of Water Resources to be used for the installation of dedicated landscape meters throughout the County. This project involves installation of dedicated meters at sites that currently have mixed-use meters with high landscape water savings potential. Two retail agencies in the SCVWD service area—Palo Alto and Mountain View—will pay for 10 sites within each agency's service area to install dedicated meters. The outreach program will target an additional 180 sites that have promising water savings potential where the customer will pay for meter installation. This program is scheduled to begin in FY 03-04.

Irrigation Retrofit Program

This project is targeted at installing upgraded irrigation hardware for sites previously identified as having high unrealized conservation potential in the district's Irrigation Technical Assistance Program (ITAP). By building on the customer information accrued through the ITAP program in the last three years, this program aims at difficult-to-attain but cost-effective landscape conservation on sites with greater than one acre of irrigated landscape. These hardware installations can be expected to produce water savings of longer persistence than the savings that can be attained through behavior change alone. This project is expected to begin in FY 03-04.

Turf Replacement Pilot Program

The WUE Unit is developing a Turf Replacement Pilot Program, which will likely target businesses and residences with large areas of turf. The program will give financial incentives for replacing lawns with water conserving plants or decorative landscape structures, such as gravel, rocks, bricks, or artificial turf. This program is expected to begin in FY 03-04.

Innovative Commercial, Industrial and Institutional Retrofits Program

The WUE Unit received a California Deptartment of Water Resources Proposition 13 Urban Water Conservation grant to fund an Innovative High-Efficiency Commercial Equipment Retrofits Program for Santa Clara County, including high-efficiency x-ray equipment for the health care industry, dry vacuums for dental offices, and high-efficiency plumbing fixtures in commercial establishments. This program is expected to commence in FY 03-04.

Future Projects: Water Recycling

Desalination Research Innovation Partnership Project: The Feasibility of Brackish Groundwater Reuse

The district is a grant recipient of a Department of Water Resources (DWR) grant fund to conduct a research study, along with the Metropolitan Water District, on the feasibility of brackish groundwater reuse. This two-year project will investigate the feasibility implementing brackish groundwater reuse that could be used in Santa Clara County to supplement expected shortages of future supplies.

Desalination Research Innovation Partnership Project: Impact Evaluation of Streamflow Augmentation with Tertiary Recycled Water

The district, along with the Metropolitan Water District, received a Department of Water Resources (DWR) grant for the study of using tertiary treated water for streamflow augmentation. This three-year project will investigate if large-scale (2 to 3 times baseflow) releases of tertiary treated recycled water into a streambed will be adequately filtered by streambed action and natural percolation or if there will be impacts to the groundwater quality. If there is potential for impact to the groundwater, this study will recommend the additional treatment required to eliminate any impact.

Water Softener Replacement Rebate Program Study

This project will build on existing studies co-funded by CALFED designed to identify the impacts of inefficient water softeners. The pilot program will set the stage for an expanded program in the future that is more efficiently and effectively targeted.

EPA II/MWD Desalination Research and Innovation Partnership Project: Tailored Municipal Wastewater Reclamation for Industrial Applications

This study will investigate the feasibility of treating industrial wastewater to a level suitable for use within a semiconductor chip manufacturing facility.

An industrial partner volunteer of the district will engage the services of water treatment experts to study the existing water use, analyze treatment requirements, perform sampling and computer modeling, make recommendations on changes and improvements and provide for written reports on all activities, recommendations and conclusions. If successful, this novel approach promises to reduce the costs for on-site reclamation by optimizing treatment processes and eliminating the need for excessive treatment.

Rejection of Wastewater-Derived Micropollutants in High-Pressure Membrane Applications

The district along with other agencies and consultants is participating in the WateReuse Foundation's Research Project: *Rejection of wastewater-derived micropollutants in high-pressure membrane applications leading to indirect potable reuse*. The project is led by Jorq Drewes, Assistant Professor at Colorado School of Mines.

The objectives of this research are to (a) determine physical-chemical properties which are suitable to describe membrane-solute interactions and rejection behavior as well as (b) to explore the relationships among physical and chemical properties of trace organics and rejection mechanisms. The ultimate goal is to develop a fundamental transport model to predict the rejection of trace organics in high-pressure membrane applications, based on hindered diffusion. The study will be conducted using bench scale and NF/RO pilot-scale facilities. Findings of the study will be verified at water reuse field site in California and Arizona.

WateReuse Foundation Research Project: N-Nitrosodimethylamine (NDMA) Fate and Transport

The Irvine Ranch Water District, Long Beach Water Department, County Sanitation Districts of Los Angeles County, Orange County Water District, Santa Clara Valley Water District, Water Replenishment District of Southern California, West Basin Municipal Water District, AWWA Research Foundation, and WateReuse Research Foundation have jointly funded a research project led by premier research teams that will address the issues surrounding the fate and transport of NDMA in recycled water that is used for spray irrigation and groundwater recharge, both by surface spreading and direct injection. The project approach will utilize both controlled laboratory studies and field tests to identify the physical, chemical and biological mechanisms that impact the fate and transport of NDMA in applied recycled water.

Conclusion and Outlook

Over the past 50 years, Santa Clara County has undergone a transformation from a picturesque agricultural valley into a thriving, high technology business capital based on the computer chip. As the county has transformed, so has the Santa Clara Valley Water District, expanding and altering goals to meet the needs and wishes of its growing population.

Water supply affects every individual and business in our region— our quality of life and economic health depend upon it. The district is dedicated to ensuring a safe and reliable water supply through careful planning and ongoing partnerships that allow local agencies, stakeholders and water customers to work together for the good of all. The Water Use Efficiency unit will continue to promote conservation and water recycling to help us meet this fundamental goal in the most efficient and cost-effective manner possible, now and into the future.

conclusion